A Framework for SMEs (Small and Medium Enterprises) Portal using Web Services

Widodo Budiharto, Michael Yoseph Ricky, Elidjen, Ro'fah Nur Rachmawati
School of Computer Science, Bina Nusantara University
Jl. K.H Syahdan no.9 - Jakarta
wbudiharto@binus.edu

Abstract— **Indonesia has a lot of SMEs as well as significant employment. However, it is estimated SMEs only producing less than 40 percent of the GDP of Indonesia. This is because SMEs mainly in the fields of agriculture and handicraft industry has a low productivity of the total 53 million SMEs that exist, one of the only place due to lack of mastery of information technology and entrepreneurial skills. Partial developments of the SMEs do not have optimal results because they do not include the strengthening of Information Technology in business due to limited capacity. One reliable solution is to develop an integrated SME information portal based web services technologies, so that anyone can obtain product information and ordering that each SME can increase sales and transactions are SMEs. Web Services is the latest web technologies which can provide information for anyone who wants to consume existing methods for the portal, so the developers can access the methods and building web applications as needed. The results of this study are the exposure of the SME portal framework and web-based application services. The expected result is the creation of blueprints and application of SME portal framework based on Web Services is presented in this paper.**

Keywords-component; web services, SME, portal

I. INTRODUCTION

Indonesia is ranked the sixth largest among developing countries and the fifth fastest growth among the G20 countries in 2010, Indonesia can no doubt is one of the fastest growing economies in the world. Indonesia has a hugeSmall and Medium Enterprises (SMEs)and very much to absorb labor. However, it is estimated SMEs only producing less than 40 per cent of Gross Domestic Product (GDP) Indonesia (Bisnis Indonesia, August 9, 2003) and increased only slightly to 53 percent of GDP in 2009. This is because SMEs, especially micro and agricultural sector (which a lot of employment), have very low productivity of the total SMEs reached 51.3 million, among a variety of factors, including low levels of mastery of technology and entrepreneurial skills among SMEs an issue raised at this time[1].

Partial development of SMEs has not much to give maximum results to increase the performance of SMEs, the wider economic development resulted in the level of competitiveness of Indonesia, other than that many SMEs do not apply in Information Technology in promoting their products. Based on the Peraturan Presiden No. 28 / 2008 about Indonesian policy of National industry, telematics as mainstay industry for the future should got serious attention in the implementation. So, application of IT for strengthening of SMEs is very important in this situation. According to Gilaninia et.al[9], some problems of small and meium enterprises for the adoption of ICT include :

1. SMEs in addition to don't having required expertise and knowledge and also lack of familiarity with technology is also beginning to use ICT with face fixed costs very high in comparison to their size. while for large businesses, this is not so. These costs include costs such as creation website, using e-commerce and costs associated with projects of electronic auctions, search engines and similar cases.

2. SMEs often have to accept market conditions and they are not in a situation like the big companies that form the market conditions (this issue is concerned follow and leader companies in the market). Moreover, instability (such as financial insecurity in SMEs) and potential risks in e-commerce, many SMEs may be inclined to risk aversion and the choice of conservative policies and in fact they adopt policy of "wait and observed" in acceptation of digital technology.

3. Small and medium companies due to limitations such as low investment, lack of laboratories, capacity less for communicating with and external consultants is facing to experiment with more serious problems for testing new procedures of business. Although financial constraints are the most important limitations but factors such as less time, fewer resources also imposed to these enterprises. Using modern ICT technology is In fact new ways that SMEs will face a substantial risk. Accordingly, we can say that the use of ICT in enterprises depends on the size of the firm.

State of the art of this research is a solution to overcome these problems by develop a framework and implemented as portal based on Web Services technology. Web Services is the latest web technologies which can provide information for anyone who wants to consume the information provided, the access methods available on the web application. Thus, any developer (application developers) can access information and build web applications as they wish with ease. This portal is expected to Indonesian SMEs information center, so that

anyone can obtain information such SMEs. The expected result is the creation of framework and application of SMsE Information Systems portal framework based on Web Services.

II. WEB SERVICES TECHNOLOGY

A. *Introduction*

Web services technology is fairly new technology in the business area, and the ICT industry. For example, after buying something over the Internet, we may have wondered about the delivery status. Calling the delivery company consumes our time, and it's also not a value-added activity for the delivery company. To eliminate this scenario the delivery company needs to expose the delivery information without compromising its security. Known since the early 2000's. Web services uses XML-based standard web protocols, so it does not depend on the platform and support interoperability.

XML (Extensible Markup Language) is a mark-up language for general purposes recommended by the W3C to create a document markup purposes of exchanging data between diverse systems. XML is an extension of HTML (HyperText Markup Language), which is a standard language to track Internet. XML designed to store data in a concise and easy to set up. XML is the key word data which is further processed to provide information and maintaining the integrity of the specifications.

Though several types of web service registries are available for use, we identify the Universal Discovery, Description, and Integration (UDDI) directory as the general standard used as a registry of web services that are available for use in a particular net-work. Think of the UDDI as a sort of "yellow pages" of web services. If we wanted to find a web service in the enterprise, we would look in the UDDI. The UDDI would tell us where to find that service, and it would link you to the WSDL document so you could examine the web service and make sure it was the one you wanted [8].

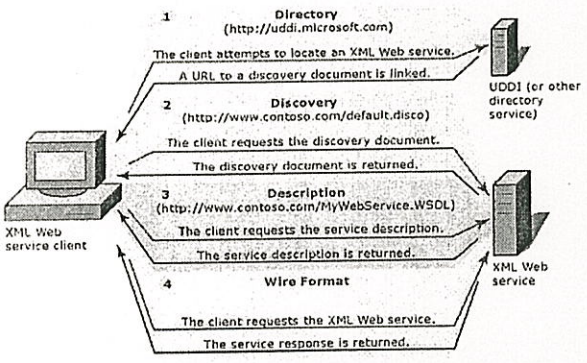

Figure 1. XML Web Services infrastructures[2]

XML provides a standardized way but can be modified to describe the contents of the document, in itself, XML can be used to describe any database view. but in a way that standard. XML advantages:

1. Intelligence XML can handle a variety of levels (level) complexity.
2. Can adapt to create their own languages, such as Microsoft creating MSXML language.
3. Easy maintenance.
4. Simply put, XML is simpler.
5. Easily moveable (Portability), XML has the ease of movement (portability) the better.

Figure 2 is a model of integrated SMEs Portal Portal, where everyone can access and develop web application for Indonesian SMEs. There are many methods that can be consumed by the developer easily on this model such as insertUKM(), Login(), displaySME() and searchSME().

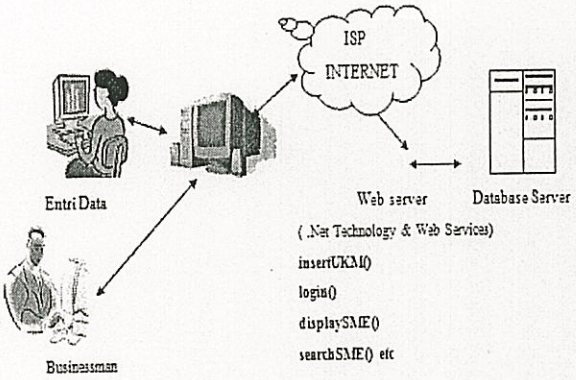

Figure 2. Model of integrated SMEs Portal Portal, where everyone can access and develop web application for Indonesia SMEs.

b. *SOAP & WSDL*

SOAP (Simple Object Access Protocol) is a standard for exchanging XML-based messages over computer networks or a path to a program that runs on an operating system (OS) to communicate with programs on the same or different OS using HTTP and XML as the mechanism to exchange data. SOAP clearly specify how to encode the XML file header HHTP and so the program on a computer can call a program on another computer and transmit information, and how the program is called to respond. SOAP is a lightweight protocol intended for exchanging information on the structure desentralized area, and distributed.

Web Services Description Language (WSDL) is XML-based language for descripting the XML. WSDL describing the service provides a service request using different protocols and encoding. WSDL will facilitate communication between applications. WSDL will

describe what will be done by the web service, how to find it and how to operate it [8].

III. PROPOSED FRAMEWORK

First, we design the use case for the portal of UKM. SMEs Owner have the ability as shown in figure 3:

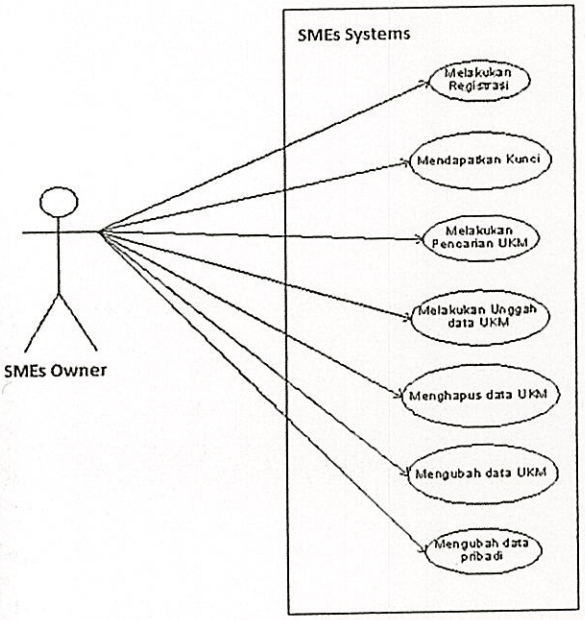

Figure 3. Use case of SMEs Systems

On the use case Diagram SMEs owner, the first user should register to get the key that will be provided to the user, after getting the key SME owners can access some functions such as upload data, delete data, change personal data etc. We have developed database system that can handle data of SMEs and order from customer as shown in Figure 4.

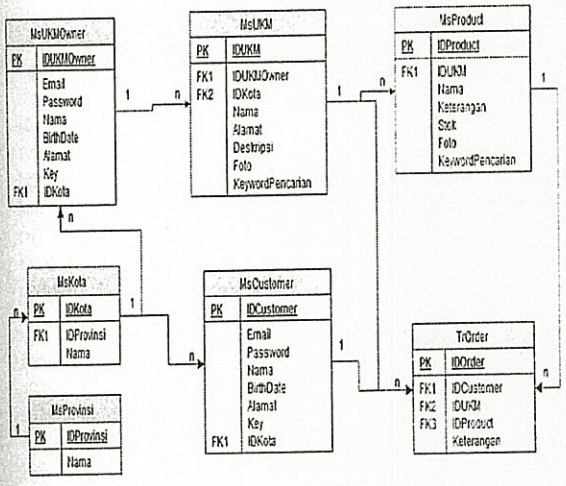

Figure 4. Tables in SMEs database

Figure 5 below is a sequence diagram of the system. User should entry data to login form. After login, it will validate to server and server will check at database. If data exist, then the application will display main menu. On the main menu, user able to modify the data.

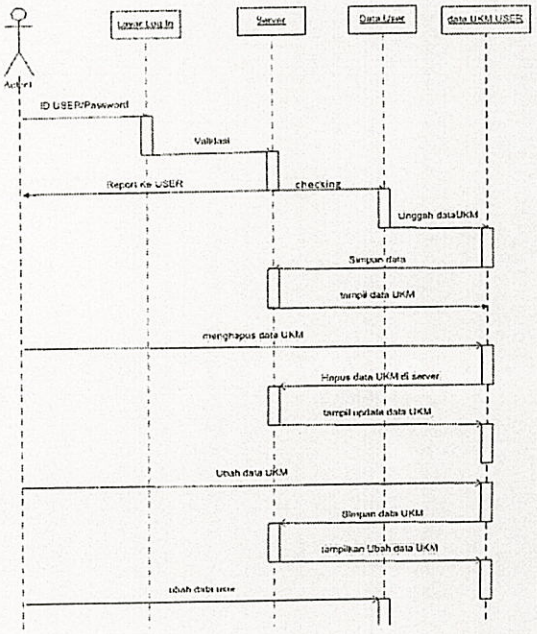

Figure 5. Sequence diagram of the system

IV. EXPERIMENTAL RESULT

We use Visual Studio 2010 and Sql Server 2008 for this system. The result of creating methods shown in figure 6. It display all of the methods that can be consumed by all of developers.

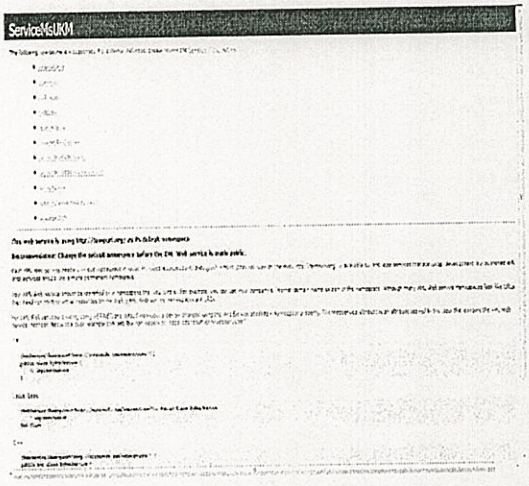

Figure 6. Methods that can be consumed by developers

The result of web application is shown in figure 7 and 8. It display the main page and information of the UKM using web services methods.

Figure 7. Homepage of Web application

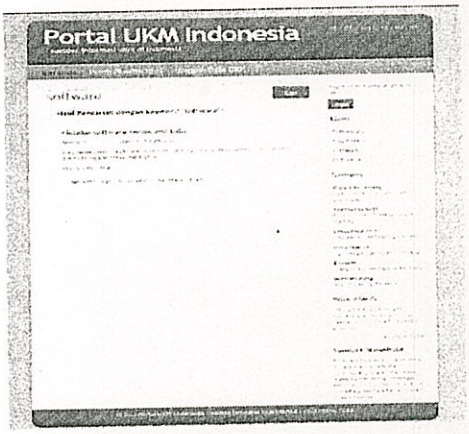

Figure 8. Searching form using web services

V. CONCLUSION

In this paper, we propose a web portal framework based SME web services. Web services technologies to collect data on SMEs in Indonesia and the owner is expected to advance the development of the SMEs and easy access to the presence of SMEs in Indonesia. Web services technologies used to collect data on SMEs in Indonesia and the owner is expected to advance the development of the SMEs and easy access to the presence of SMEs in Indonesia. Web services is expected to provide facilities for SME owners to promote or distribute information in his possession and presence of SMEs makes it easy for investors or people with an interest and want to access and obtain information of Indonesian SMEs.

ACKNOWLEDGMENT

This research funded by Binus Grant for year 2012.

REFERENCES

[1] Informasi data UMKM Indonesia, http://jurnalukm.wordpress.com/2010/09/11/menko-hatta-tiak-bangga-ri-punya-51-juta-umkm/, diakses 5 januari 2012.

[2] Web services infratructures, http://msdn.microsoft.com/en-us/library/sd5s0c6d(v=vs.71).aspx, diakses 14 Januari 2012.

[3] A. Masoom, N. Mohammad, Z. Xinwen, Behavioral Attestation for Web Services Based Business Processes, International Journal of Web Services Research, vol 7. No 3, pp. 52-72, 2010.

[4] Widodo Budiharto, XML Web Services menggunakan Teknologi .Net, Jurnal ilmiah berkala Univ Bina Nusantara, 2005.

[5] Widodo Budiharto, Pemrograman VB .Net 2005, Andi Offset Publisher, 2009.

[6] Widodo Budiharto, Aplikasi e-Commerce menggunakan Visual C#.Net, Andi Offset Publisher, 2005.

[7] Widodo Budiharto, Pemrograman VB.Net Tingkat Lanjut, Elex Media Komputindo, 2003.

[8] http://www.soatutorial.net/soa-technology-soap-wsdl-uddi/ accessed 10 October 2012

[9] Gilaninia, S., Omidvari, N., Bakhshalipour, A., Bakhshalipour, A., Eftekhari, F., and Seighalani, F. Z., 2012, The Role of ICT in Performance of Small and Medium Enterprises, Interdisciplinary Journal of Contemporary Research Business, Vol. 3, No.9, pp833-839.